CPEL0652725P

Patent Office of the People's Republic of China

Address: Receiving Section of the Chinese Patent Office, No. 6 Tucheng Road West, Haidian District, Beijing. Postal code: 100088

Applicant	NIPPON TELEGRAPH AND TELEPHONE CORPORATION	Date of Issue
Agent	China Patent Agent (H.K.) Ltd.	,
Patent Application No.	200580001547.2 Application June 17, 2005	July 11, 2008
Title of Invention	LINEAR REPEATER AND OPTICAL FIBER COMMI	UNICATION

Second Office Action

Apr15,2008 in respond and on this basis continuous captioned patent application on the basis of the Resette Chinese Patent Office.	red the Observations, submitted by the applicant on use to thefirst Office Action issued by the Patent Office, used to conduct examination as to substance of the cation. Examination Decision made by the Reexamination Board of use on, the examiner has continued to conduct ance of the captioned patent application.
document(s): If the amended application document the replacement sheet the said Observations.	een conducted in the light of the following application on document(s) attached to the said observations. ent(s) at which the previous Office Action is directed, and (s) of the amended application document(s) attached to ent(s) at which the previous Office Action is directed.
☐ the application docum	ent(s) confirmed in the said Reexamination Decision.
☑ The following reference	new reference documents have been cited. document(s) is/are cited in this Office Action. (Its/Their seric litter those previously cited and will continue to be used ation procedure):

Serial No.	Number or Tifle(s) of Reference Document(s)	Date of Publication (or filing date of Interfering appl.)
7	CN1288172A	Date: 2001-3-21 (

4.	. Concluding comments of the examiner:
	On the description:
	☐ The amendment to the description is not in conformity with the provision of Art.
	33 of the Patent Law.
	☐ The content of the application comes within the scope where no patent right
	shall be granted as prescribed in Art. 5 of the Patent Law.
	☐ The description is not in conformity with the provision of Art. 26, para. 3 of the
	Patent Law. □ The drafting of the description is not in conformity with the provision of Rule 18 of
	the Implementing Regulations.
	The implementing regulations.
V	1 On the claims:
	☐ The amendment to Claim(s) is not in conformity with the provision of Art.
	33 of the Patent Law.
	☐ Claim(s) come(s) within the scope where no patent right shall be
	granted as prescribed in Art. 25 of the Patent Law.
	Claim(s) is/are not in conformity with the definition of invention in Rule 2,
	para. 1 of the Implementing Regulations.
	☐ Claim(s) possess(es) no novelty as prescribed in Art. 22, para. 2 of the Patent Law.
	☑ Claim(s) 1-18 possess(es)no inventiveness as prescribed in Art. 22, para. 3
	of the Patent Law.
	☐ Claim(s) possess(es) no practical applicability as prescribed in Art. 22,
	para. 4 of the Patent Law.
	□ Claim(s) is/are not in conformity with the provision of Art. 26, para. 4 of
	the Patent Law.
	□ Claim(s) is/are not in conformity with the provision of Art. 31, para. 1 of
	the Patent Law.
	□ Claim(s) is/are not in conformity with the provisions of Rule 20 of the
	Implementing Regulations.
	☐ Claim(s) is/are not in conformity with the provision of Art. 9 of the Patent
	Law. □ Claim(s) is/are not in conformity with the provision of Rule 23 of the
	Implementing Regulations.
	implementing regulations.

See the text portion of this Office Action for a detailed analysis of the above concluding comments.

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 5. In view of the above concluding comments, the examiner deems that the applicant should make amendment to the application document(s) according to the requirements raised in the text portion of this Office Action. the applicant should expound in his/its observations the reason why the captioned patent application is patentable and make amendment to what is not in conformity with the provisions as pointed out in the text portion of this Office Action, otherwise the said application will be rejected. the patent application has no substantive content(s) for which the patent right may be obtained, if the applicant has no sufficient reason to demonstrate that the captioned application may be granted a patent right, said the application will be rejected.
6. The applicant should pay attention to the following matters:
(1) According to the provision of Art. 37 of the Patent Law, the applicant should submit his/its observations within https://www.months.com/the-date-of-receipt-of-this-Office Action; if without any justified reason(s), the time limit for making a response is not met, the said application shall be deemed to have been withdrawn.
(2) The amendment(s) made by the applicant to the application should be in conformity with the provisions of Art. 33 of the Patent Law and Rule 51 of the Implementing Regulations thereof, the amended text should be in duplicate and its form should conform to the relevant provisions of the Guidelines for Examination.
(3) The observations and/or amended text of the applicant should be submitted to the Receiving Section of the Chinese Patent Office by mail or by personal delivery, if not submitted Receiving Section by mail or by personal delivery, the document(s) will have no legal effect.
(4) If no appointment is made in advance, the applicant and/or the agent shall not come to the Chinese Patent Office to hold an interview with the examiner.
7. This Office Action consists of the text portion totaling4 page(s) and of the following attachment(s): ☑1 copy(copies) of the reference document(s) cited totaling8 page(s).

CPEL0652725P

Text of the Second Office Action

Application number: 2005800015472

The applicant submitted the Observations and the amended application document on April 15, 2008. After reading said documents, the Examiner resumed examination and made the following comments:

1. The technical solution claimed in claim 1 lacks inventiveness as prescribed in Art. 22, para. three of the Patent Law. Claim 1 seeks to protect an optical fiber communication system. D1 (CN1279549A) discloses a wavelength division multiplexing optical fiber transmission system, and specifically discloses the following technical features: comprising an optical fiber for transmitting signals within a range of wavelengths, and some injection devices (equivalent to the multiplexer in the present invention), which inject at least one pump whose wavelength is smaller than said range into the optical fiber, the wavelength and energy of said pump shall be selected to be capable of correcting the tilt caused over the signals within said frequency range due to the amplifying effect of stimulated Raman effect; preferably, the difference between the shortest wavelength of said range of wavelengths and the wavelength of the pump is between 10 and 15 THz; in one embodiment, the injection devices inject pumps in the direction of transmission of said signals (see lines 21-26 on page 2 of the description, and claims 1-3). The numerical range "10 and 15 THz" of frequency difference between the shortest wavelength of the signal light and the wavelength of the pump as disclosed in D1 falls within the corresponding numerical range "13.7 to 30 THz" of frequency difference between the shortest wavelength of the signal light and the longest wavelength of the pump in claim 1, so the technical solution claimed by claim 1 differs from the technical contents disclosed by D1 only in that: (1) the gain medium for Raman amplification in claim 1 is silica fiber, while in D1 it is only optical fiber; (2) the signal light in claim 1 has a wavelength longer than the zero-dispersion wavelength of the silica fiber; (3) a power spectrum of the signal light is set so that the power of the signal light input to the silica fiber decreases the further to the short wavelength side where the Raman gain due to the Raman amplification is large.

Regarding the distinguishing feature (1), it is a common technical means to a person having ordinary skill in the art to adopt an optical fiber of silica as the gain medium for Raman amplification in the optical fiber communication system, so it is the known knowledge in the art.

From distinguishing feature (2), it can be seen that the technical problem actually to be solved by the invention is the signal light quality degradation caused by four-wave mixing effect. D2 (US2001036347A1) discloses a Raman amplified optical communication system, and specifically discloses the following technical features: the strength of four-wave mixing can be significantly decreased by increasing the fiber dispersion at the mixing wavelengths (namely the zero-dispersion wavelength value of the optical fiber is beyond the wavelength where mixing may occur) (see para. 8 of the description, and Fig. 26). It can be seen from D2 that, as long as the zero-dispersion wavelength of the optical fiber is beyond the signal light wavelength and the pumping light wavelength, the effect of significantly decreasing the four-wave mixing effect can be achieved. Under the inspiration of D2 and according to actual needs, it is a conventional technical means for a person having ordinary skill in the art to make the signal light have a wavelength longer than the zero-dispersion wavelength of the silica fiber.

From distinguishing feature (3), it can be seen that the technical problem actually to be solved by the invention is to flatten the gain of the system. D7 (CN1288172A) has disclosed an optical amplifying apparatus that is free of deviations between optical powers of respective wavelength bands after transmission of wide-wavelength-band light, and has disclosed the following technical features (see line 15, page 2 to line 4, page 6 of the description and claims 1-3): "the stimulated Raman scattering makes optical powers of respective channels non-uniform because it causes

shorter-wavelength optical power to be transferred to a longer-wavelength side through interaction with optical phonons in the optical transmission line, this causes a gain gradient and hence deteriorates the optical signal-to-noise ratios of WDM optical signals of shorter-wavelength channels"; "said object is attained by an apparatus having a plurality of optical adjusting sections, a wavelength-multiplexing section, and a control section provided to the corresponding wavelength band, in which the control section controls the outputs of the optical adjusting sections so that optical power of light in a shorter-wavelength band becomes larger than optical power of light in a longer-wavelength band"; "since the above apparatus can control the outputs of the optical adjusting sections, it can eliminate deviations between the wavelength bands that would otherwise occur due to wavelength-dependent amplification and losses..., and hence can increase the optical SNRs". That is, D7 has disclosed a method for flattening the gain of the optical amplifying apparatus, which controls the power distribution of the input light to control the power distribution of said light after Raman amplification, thereby making the power of the light in the shorter-wavelength band with small gain larger and realizing gain flattening. It can be seen that under the inspiration provided by D7 and according to the specific situation of the present invention, i.e. the gain at the shorter-wavelength side is larger, and the gain at the longer-wavelength side is smaller, it is obvious for those skilled in the art to control the input light to have a smaller power at the shorter-wavelength side, and no inventive effort is needed.

Therefore, it is obvious for those skilled in the art to obtain the technical solution claimed in claim 1 on the basis of D1 in combination with D2 and D7 and the known knowledge in the art. Accordingly, claim 1 lacks prominent substantive features and does not represent notable progress, and it lacks inventiveness.

2. The additional technical feature of claim 2 has been disclosed by D3, and it performs the same function in D3 as it does in the present invention (please refer to point 2 in the text of the first Office Action for details). Therefore, when the cited claim 1 does not possess inventiveness, claim 2 does not possess inventiveness as

prescribed in Art. 22, para. three, of the Patent Law, either.

- 3. The additional technical features of claim 3 have been disclosed by D1 and D2 respectively, and they perform the same function in D1 and D2 as in the present invention (please refer to point 3 in the text of the first Office Action for details). Therefore, when the cited claim 1 does not possess inventiveness, claim 3 does not possess inventiveness as prescribed in Art. 22, para. three, of the Patent Law, either.
- 4. The additional technical features of claims 4 and 5 have been disclosed by D1 and D4 respectively, and they perform the same function in D1 and D4 as in the present invention (please refer to point 4 in the text of the first Office Action for details). Therefore, when the cited claim 1 does not possess inventiveness, claims 4 and 5 do not possess inventiveness as prescribed in Art. 22, para. three, of the Patent Law, either.
- 5. The additional technical feature of claim 6 is the known knowledge in the art (please refer to point 5 in the text of the first Office Action for details). Therefore, when the cited claim does not possess inventiveness, dependent claim 6 does not possess inventiveness as prescribed in Art. 22, para. three, of the Patent Law, either.
- 6. Claim 7 is dependent on claim 2 or 3. When combining the known knowledge in the art with the contents disclosed in D2, the application of the additional technical feature of claim 7 to the present invention is obvious to those skilled in the art (please refer to point 6 in the text of the first Office Action for details). Therefore, when the cited claim does not possess inventiveness, dependent claim 7 does not possess inventiveness as prescribed in Art. 22, para, three, of the Patent Law, either.
- 7. The additional technical features of claims 8-11 and 14-18 are known knowledge in the art (please refer to points 7, 9-10 and 14-15 in the text of the first Office Action for details). Therefore, when the cited claim does not possess inventiveness, said dependent claims do not possess inventiveness as prescribed in Art. 22, para. three, of

the Patent Law, either.

8. Claim 12 is dependent on claim 2 or 3. When combining the known knowledge in

the art with the contents disclosed in D4 and D5, the application of the additional

technical feature of claim 12 to the present invention is obvious to those skilled in the

art (please refer to point 11 in the text of the first Office Action for details). Therefore,

when the cited claim does not possess inventiveness, dependent claim 12 does not

possess inventiveness as prescribed in Art. 22, para. three, of the Patent Law, either.

9. Claim 13 is dependent on claim 12. When combining the known knowledge in the

art with the contents disclosed in D5 and D6, the application of the additional

technical feature of claim 13 to the present invention is obvious to those skilled in the

art (please refer to point 12 in the text of the first Office Action for details). Therefore,

when the cited claim does not possess inventiveness, dependent claim 13 does not

possess inventiveness as prescribed in Art. 22, para. three, of the Patent Law, either.

For the aforementioned reasons, neither the independent claims nor the dependent

claims possess inventiveness, and meanwhile, no substantive patentable content is

disclosed in the description. Hence, even if the applicant reorganizes the claims and/or

makes further definitions to the claims according to what is disclosed in the

description, it is still unlikely for this application to be granted the patent right. If the

applicant cannot present convincing reasons to prove the inventiveness of this

application within the time limit specified in this Office Action, this application will

be rejected.

Examiner: Hu Wanyue

Code: 5A25

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中华人民共和国国家知识产权局

100032 北京市西城区金融街 27 号投资广场 B 座 19 层 中国专利代理(香港)有限公司 浦柏明,刘宗杰	发文日
申请号: 2005800015472	
申请人:日本电信电话株式会社	
发明名称:线性中继器以及光纤通信系统 0652/	750 (表现)
第 2 次 审 查 意 见 通 知 书 1. ②审查员已收到申请人于2008 年 4 月 15 日提交的意见陈述书,在此基 续进行实质审查。	超上审查员对上述专利申请继
续实质审查。 2. □申请人于 年 月 日提交的修改文件,不符合专利法实施细则第 3. 继续审查是针对下述申请文件进行的。 □上述意见陈述书中所附的经修改的申请文件。 □前次审查意见通知书所针对的申请文件。 □上述复审决定所确定的申请文件。 □上述复审决定所确定的申请文件。 □上述复审决定所确定的申请文件。 □本通知书未引用新的对比文件。 ②本通知书引用下述对比文件(其编号续前,并在今后的审查过程中继编号 文件号或名称 公开日期(或抵触7 CN1288172A 2001-3-21	的经修改的申请文件替换页。
5. 审查的结论性意见: 关于说明书: 申请的内容属于专利法第 5 条规定的不授予专利权的范围。 说明书不符合专利法第 26 条第 3 款的规定。 说明书的修改不符合专利法第 33 条的规定。 说明书的撰写不符合专利法实施细则第 18 条的规定。	2 6 SEP 2008
□ 权利要求 属于专利法第 25 条规定的不授予专利权的范围。 □ 权利要求 不符合专利法第 26 条第 4 款的规定。 □ 权利要求 不符合专利法第 31 条第 1 款的规定。	利申查业务章

申请号	2005800015472
]权利要求不符合专利法实施细则第 20 条的规定。
]权利要求不符合专利法实施细则第 21 条的规定。
]权利要求不符合专利法实施细则第 22 条的规定。
]权利要求不符合专利法实施细则第 23 条的规定。
	<u></u>
]分案的申请不符合专利法实施细则第 43 条第 L 款的规定。
	:述结论性意见的具体分析见本通知书的正文部分。
	至于上述结论性意见,审查员认为:
]申请人应按照通知书正文部分提出的要求,对申请文件进行修改。
]申请人应在意见陈述书中论述其专利申请可以被授予专利权的理由,并对通知书正文部分中指出的
不	·符合规定之处进行修改,否则将不能授予专利权。
\checkmark]专利申请中没有可以被授予专利权的实质性内容,如果申请人没有陈述理由或者陈述理由不充分,
其	宇请将被驳回。
	请人应注意下述事项:
(1) 7	根据专利法第37条的规定,申请人应在收到本通知书之日起的贰个月内陈述意见,如果申请人无正
当埋	且逾期小答复,其申请将被视为撤回。
(2) F	申请人对其申请的修改应符合专利法第 33 条和实施细则第 51 条的规定,修改文本应一式两份,其格
	符合审查指南的有关规定。
(3) ₽	申请人的意见陈述书和/或修改文本应邮寄或递交国家知识产权局专利局受理处,凡未邮寄或递交给
受理	处的文件不具备法律效力。
(4) 5	末经预约,申请人和/或代理人不得前来国家知识产权局专利局与审查员举行会晤。
8. 本	通知书正文部分共有4页,并附有下述附件:
桱	引用的对比文件的复印件共 <u>1</u> 份 <u>8</u> 页。

审查员: 胡婉约(5A25) 2008年6月25日



审查部门 光电技术审查部

第二次审查意见通知书正文

申请号: 2005800015472

申请人于2008年4月15日提交了意见陈述书和经过修改的申请文件,审查员在阅读了上述文件后,对本申请继续进行审查,再次提出如下审查意见。

1. 权利要求1所要求保护的技术方案不具备专利法第二十二条第三款规定的创造性。权利要求1请求保护一种光纤通信系统。对比文件1(CN1279549A)公开了一种波分复用光纤传输系统,并具体公开了以下的技术特征:它包括一根在一定波长范围内传播信号的光纤,和一些注入装置(相当于本发明中的合波器),它们将波长小于所述范围的至少一个泵注入到光纤中,该泵的波长和能量要选择成能够对因受激拉曼效应放大作用而在所述频率范围内的信号上引起的倾斜进行校正。优选的是,所述波长范围的最低波长与泵的波长之间的偏差在10和15THz之间。在一种实施形式中,注入装置在所述信号的传播方向上将泵注入(参见说明书第2页第21行到第26行,权利要求1-3)。对比文件1中公开的信号光的最低波长与泵的波长的频率差数值范围"10和15THz之间"落入了权利要求1相应的信号光的最低波长与泵的最长波长的频率差数值范围"13.7~30THz"之中,因此,权利要求1所要求保护的技术方案与对比文件1所公开的技术内容相比,其区别仅在于:①权利要求1中的拉曼放大增益介质为石英光纤,而对比文件1中仅指出为光纤;②权利要求1中的位号光比所述石英光纤的零色散波长长;③设定该信号光功率的频谱,以便越靠近所述拉曼放大产生的拉曼增益较大的短波侧,输入到所述石英光纤的所述信号光的信号光功率越低。

关于区别特征①,采用材质为石英的光纤作为光纤通信系统中的拉曼放大增益介质是本领域技术人员的常用技术手段,属于本领域的公知常识。

基于区别特征②,本发明实际要解决的技术问题是由于四波混频效应而产生的信号光质量劣化。对比文件2(US2001036347A1)公开了一种拉曼放大光通信系统,并具体公开了以下技术特征:通过增加光纤在混频波长处的色散值(即光纤的零色散波长值在会发生混频的波长之外),可以显著降低四波混频的强度(参见说明书第8段、附图26)。由对比文件2可以得出,只要光纤的零色散波长在信号光波长和泵浦光波长之外,均可达到显著降低四波混频效应的效果。在对比文件2的启示下,根据实际需要,选择信号光比所述石英光纤的零色散波长长对本领域技术人员来说属于常规技术手段的选择。

基于区别特征③,本发明实际要解决的技术问题是使系统的增益平坦。对比文件7(CN1288172A)公开了一种在宽波长带光传输之后在各波长带的光功率间没有偏差的一种光学放大装置,并具体公开了以下技术特征(参见说明书第2页第15行到第6页第4行、权利要求1-3):"由于受激拉曼散射使得较短波长光功率在光传输线中经与光声子发生交互作用要被转送到较长波长侧,从而使各信道的光功率不均匀。这样便产生了增益梯度并因此恶化了较短波长信道的WDM光信号的光学信噪比"、"该目的通过一种具有提供给相应波长带的多个光学调节部分、波长多路复用部分和控制部分的装置来实现,其中控制部分控制光学调节部分的输出以使较短波长带中的光的光功率大于较长波长带中的光的光功率"、"它能消除波长带之间的因与波长有关的放大和损耗而另外产生的偏差,……,从而可增加光学SNR"。即,对比文件7公开了一种使光学放大装置增益平坦的方法,其通过控制输入光的功率分布来控制该光在拉曼放大之后的功率分布,使增益较小的短波长带中的光的光功率较大,从而达到增益平坦。由此可见,在对比文件7的启示下,根据本发明的具体情况,即短波侧的增益较大,长波侧的增益较小,控制输入光在短波侧的功率较小,对本领域的技术人员来说是显而易见的,不需要付出创造性劳动。

由此可知,在对比文件1的基础上结合对比文件2、7以及本领域的公知常识,得到权利要求1请求保护的技术方案,对本领域技术人员来说是显而易见的,因而权利要求1不具有突出的实质性特点和显著的进步,不具备创造性。

- 2. 权利要求2的附加技术特征被对比文件3公开,且其在对比文件3中所起的作用与其在本发明中所起的作用相同(具体可以参考第一次审查意见通知书中的审查意见2)。因此当其引用的权利要求1不具备创造性时,该权利要求也不具备专利法第二十二条第三款规定的创造性。
- 3. 权利要求3的附加技术特征中的各技术特征分别被对比文件1、2公开,且在该两个对比文件中所起的作用与其在本发明中所起的作用相同(具体可以参考第一次审查意见通知书中的审查意见3)。因此当其引用的权利要求1不具备创造性时,该权利要求也不具备专利法第二十二条第三款规定的创造性。
- 4. 权利要求4、5的附加技术特征中的各技术特征分别被对比文件1、4公开,且其 在该两个对比文件中所起的作用与其在本发明中所起的作用相同(具体可以参考第一

次审查意见通知书中的审查意见4)。因此当其引用的权利要求1不具备创造性时,该两个权利要求也不具备专利法第二十二条第三款规定的创造性。

- 5. 权利要求6的附加技术特征属于本领域的公知常识(具体可以参考第一次审查 意见通知书中的审查意见5),因此当其引用的权利要求不具备创造性时,该从属权 利要求也不具备专利法第二十二条第三款规定的创造性。
- 6. 权利要求7是权利要求2或3的从属权利要求,在对比文件2公开内容的基础上结合本领域的公知常识,该权利要求的附加技术特征在本发明中的运用对本领域的技术人员来说是显而易见的(具体可以参考第一次审查意见通知书中的审查意见6)。因此当其引用的权利要求不具备创造性时,该从属权利要求也不具备专利法第二十二条第三款规定的创造性。
- 7. 权利要求8-11、14-18的附加技术特征均属于本领域的公知常识(具体可以参考第一次审查意见通知书中的审查意见7、9-10、14-15)。因此当其引用的权利要求不具备创造性时,该些从属权利要求也不具备专利法第二十二条第三款规定的创造性。
- 8. 权利要求12是权利要求2或者3的从属权利要求,在对比文件4、5公开内容的基础上结合本领域的公知常识,该权利要求的附加技术特征在本发明中的运用对本领域的技术人员来说是显而易见的(具体可以参考第一次审查意见通知书中的审查意见11)。因此当其引用的权利要求不具备创造性时,该从属权利要求也不具备专利法第二十二条第三款规定的创造性。
- 9. 权利要求13是权利要求12的从属权利要求,在对比文件5、6公开内容的基础上结合本领域的公知常识,该权利要求的附加技术特征在本发明中的运用对本领域的技术人员来说是显而易见的(具体可以参考第一次审查意见通知书中的审查意见12)。因此当其引用的权利要求不具备创造性时,该从属权利要求也不具备专利法第二十二条第三款规定的创造性。

基于上述理由,本申请的独立权利要求以及从属权利要求都不具备创造性,同时

说明书中也没有记载其他任何可以授予专利权的实质性内容,因而即使申请人对权利要求进行重新组合和/或根据说明书记载的内容作进一步的限定,本申请也不具备被授予专利权的前景。如果申请人不能在本通知书规定的答复期限内提出表明本申请具有创造性的充分理由,本申请将被驳回。

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